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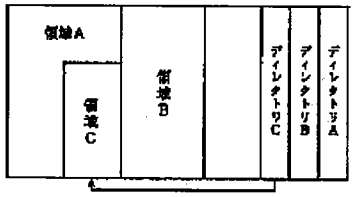
HARIMA HIROTSUGU
JO TERUAKI

(54) MANAGING METHOD FOR MEMORY AREA



(57)Abstract:

PURPOSE: To provide the managing method for memory area so as to clearly and accurately deal with the right of access for each user when the memory area is hierarchically utilized by the plural users

CONSTITUTION: Directories A and B are prepared by allocating an area A for banks and allocating an area B for hospitals in the memory area of an IC card. When the bank lends one part of the area A to a credit company, an area C is defined and a directory C is prepared. The credit company utilizes the area C. Right information defining the access right of the bank to the area C for each instruction is written in the directory C.

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[Date of requesting appeal against examiner's decision of rejection]	04.07.2002
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CLAIMS

[Claim(s)]
[Claim 1] Divide a memory area, and assign two or more persons and the directory where information required in order to access the assigned field was recorded is prepared for every allocation field. In the management method of the memory area which enabled it to share a memory area by two or more persons As opposed to the 2nd field assigned to said 2nd person when hierarchical assignment which assigns the 2nd person again the part in the 1st field assigned to the 1st person was performed The management method of the memory area characterized by writing in the authority information which shows whether said 1st person can execute a predetermined instruction in the directory about said 2nd field.
[Claim 2] The management method of the memory area characterized by writing in the authority information which shows whether it can perform about each of at least four instructions, the read-out instruction of data to the 2nd field, the postscript instruction of data, the rewriting instruction of data, and re-quota instruction-to other persons **, in a management method according to claim 1 in the directory about said 2nd field.

[Translation done.]

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention divides the management method of a memory area, and the memory area of the storage especially built in the IC card, assigns them to two or more persons, and relates to the management method of the memory area which enabled it to share a memory area by two or more persons.
[0002]
[Description of the Prior Art] As a new information record medium which replaces a magnetic card, the IC card attracts attention. this IC card contains the memory device, compared with a magnetic card, informational memory capacity is boiling it markedly, is improving, and, moreover, it has advanced security. Therefore, it is possible to use the IC card of one sheet for two or more applications. For example, it becomes possible to enable it to use the IC card of one sheet published to the specific individual for two or more applications called the ATM card for banks, the medical examination card for hospitals, and prepaid card for department stores. In this case, three persons called a bank, a hospital, and a department store will share the memory area in the same IC card. In order to make two or more persons share the IC card of one sheet, it is common to define two or more fields as a memory area, and to assign each field to each **. That is, in the case of an above-mentioned example, three fields called the field for banks, the field for hospitals, and the field for department stores will be assigned at the time of card issue.
[0003]
[Problem(s) to be Solved by the Invention] It is expected that the use gestalt of an IC card becomes more complicated future still. Although three persons called a bank, a hospital, and a department store are in a juxtaposition use gestalt in an above-mentioned example, it is thought that a hierarchical use gestalt is also needed from now on. For example, a part of field where the bank was assigned to self is lent to a consumer credit company, and a use gestalt which defines and uses the field for consumer credit companies for a part of field for banks is also considered. In this case, to a high order hierarchy's bank, a consumer credit company will belong to a low order

hierarchy. Furthermore, a use gestalt which lends a part of field where this consumer credit company was assigned to self to another small firm is also considered. Thus, in order to realize not only a juxtaposition use gestalt but a hierarchical use gestalt, rational management of a memory area is needed and it cannot fully respond in the conventional management method. Especially, it is necessary to fix the various access permissions relevant to security clearly among many persons.

[0004] Then, this invention aims at offering the management method of the memory area which can deal with the access permission for every user clearly, when a memory area is used by two or more persons hierarchical.

[0005]

[Means for Solving the Problem]

(1) This application the 1st invention divides a memory area, and assigns it to two or more persons. In the management method of the memory area which prepares the directory where information required in order to access the assigned field was recorded for every allocation field, and enabled it to share a memory area by two or more persons As opposed to the 2nd field assigned to the 2nd person when hierarchical assignment which assigns the 2nd person again the part in the 1st field assigned to the 1st person was performed The authority information which shows whether the 1st person can execute a predetermined instruction is written in in the directory about the 2nd field.

[0006] (2) Write in the authority information which shows whether this application 2nd invention can be performed in the management method concerning the 1st above-mentioned invention about each of at least four instructions, the read-out instruction of data to the 2nd field, the postscript instruction of data, the rewriting instruction of data, and re-quota instruction-to other persons **, in the directory about the 2nd field.

[0007]

[work --] for In the management method of the memory area by this invention, the authority information which shows whether the 1st person can execute a predetermined instruction is written in in the directory about the 2nd field to the 2nd field assigned to the 2nd person. For example, a part of field where the bank was assigned to self is lent to a consumer credit company, and the case where the field for consumer credit companies is defined as a part of field for banks is considered. In this case, in the directory for the field for consumer credit companies, the authority information which shows whether a bank can execute a predetermined instruction is written in to this field for consumer credit companies. For example, although it has the authority for a bank to read the data in the field for consumer credit companies when the authority information on the purport that only the read-out instruction of data can be executed is written in, it will have the authority to perform a postscript, rewriting, etc. of data. In this way, the authority for every user can be clearly dealt with now.

[0008]

[Example] Hereafter, it explains based on the example illustrating this invention. Here, the case where the memory area of EEPROM built in the IC card is shared by two or more persons is taken for an example. First, on the memory area of this EEPROM, as shown in drawing 1 , Fields A and B and Directories A and B shall be defined. Here, information (for example, the address information of Field A, full capacity, already recorded record count) required for Directory A in order to access Field A is written in, and information required in order to access Field B is written in Directory B. Here, the following explanation is given as what Field A is secured to as a use field of a bank, and Field B is secured as a use field of a hospital. Therefore, the making a deposit frame and drawer frame of a bank deposit, the amount of borrowed money, etc. will be recorded on Field A, and for example, medical examination record, an inspection result, etc. will be recorded on Field B. Therefore, the owner of this IC card can also use this IC card as a cash advance card for banks, and can also use as a medical examination card for hospitals.

[0009] The common gestalt by a bank and a hospital which mentioned above is a juxtaposition use gestalt by two or more persons. On the other hand, for example, a part of field where the bank was assigned to self is lent to a consumer credit company, and a hierarchical use gestalt which defines and uses the field for consumer credit companies for a part of field for banks is also considered. That is, as shown in drawing 2 , the field C for consumer credit companies is defined as a part of field A for banks, and a bank lends a part of field assigned for self to a consumer credit company (re-assignment). In this case, the directory C where information required in order to access the field C for consumer credit companies was written in will newly be created.

[0010] Here, in the case of a juxtaposition use gestalt like Field A and Field B, the access permission to each field becomes clear enough as [this]. Because, the bank only has the authority to perform access about Field A using Directory A, and the hospital only has the authority to perform access about Field B using Directory B. However, in the case of a hierarchical use gestalt like Field A and Field C, it is necessary to define the access permission to each field clearly. Although the consumer credit company has the authority to perform access about Field C using Directory C, it is because a bank will have the authority to perform access about the

whole field A including this field C, using Directory A. Of course, although it is also possible to take a use gestalt which accepts all the access permissions about the whole field A which included Field C in this way in the bank, such a use gestalt is not necessarily from the viewpoint of business necessarily desirable. Field C is a field defined in order that a consumer credit company might use primarily, and if a bank rewrites the data of this field C freely, when un-arranging will arise, even if it leaves the authority to read the data of Field C to a bank, in order that the direction which does not leave the authority to rewrite may prevent accident, it is desirable [Field]. Or it may be more desirable not to leave even the authority to read the data of Field C to a bank for privacy protection of the owner of this IC card. Then, it enables it to clarify the access permission to this field C by the following approaches in this invention.

[0011] That is, as shown in drawing 3 , authority information is written in some directories C. Authority information is constituted from this example by the 4-bit flags F1-F4. In the flag F1, the propriety of "rewriting of data" and a flag F3 show the propriety of "a postscript of data", and, as for the propriety of "loan of a field", and a flag F2, the flag F4 shows the propriety of "read-out of data." "Rewriting of data" is processing which rewrites the contents of the record already written in Field C, "loan of a field" is processing which re-assigns still someone else Field C here, and "read-out of data" is ["a postscript of data" is processing which carries out the additional writing of the record new to Field C and] processing which reads the record already written in Field C. For example, as for a bank, activation will become possible if it is "1", although activation of that instruction is impossible to Field C if this flag is "0." In this case, what is necessary is to consider as F4= "1" and just to set all other flags as it "0", if it leaves only the read-out authority of the data in Field C to a bank. In addition, in order to execute the instruction, when the special security condition is demanded (for example, input of a specific key), of course, it will be the requisite that the security condition is fulfilled. Although it will write in when defining Field C and creating Directory C, you may enable it to change such authority information behind.

[0012] Although the above authority information restricts the authority of the bank as loan origin to the field C lent to the consumer credit company, when restricting the authority of a consumer credit company, it should just use the key as a security condition for executing an instruction. That is, a bank creates Directory C, in order to lend Field C to a consumer credit company, but at this time, as shown in drawing 4 , it writes in security information in Directory C. This security information consists of keys K1, K2, K3, and K4 for every instruction. For example, a key K2 is a key required in order to execute "rewriting of data" instruction to Field C. And to a consumer credit company, only the thing about the instruction which grants authority among these keys is taught. Although a consumer credit company can perform rewriting of data, postscript, and read-out using these keys, it becomes impossible for example, to lend Field C to still someone else, when only three of keys K2, K3, and K4 are taught to a consumer credit company. By such approach, the authority of the consumer credit company as a loan place can be restricted now.

[0013] In addition, in order to raise security, as for keys K1-K4, considering as the so-called transfer key is desirable. That is, a consumer credit company enables it to write in another formal keys KY1-KY4 using the keys K1-K4 taught from the bank. Keys K1-K4 will be used as a temporary key until a consumer credit company writes in a formal key. If such an approach is taken, since the formal keys KY1-KY4 are not known in a bank, its security will improve more.

[0014] As mentioned above, although explained based on the example illustrating this invention, this invention is not limited only to this example and can be carried out in various modes. Especially each instruction shown as authority information or security information is only what gave an example, and this invention is not limited only to these instructions.

[0015]

[Effect of the Invention] Since the information which shows the authority of a lending agency was written in in the directory of a loan place according to the management method of the memory area according to this invention the above passage, also when a memory area is used by two or more persons hierarchical, the access permission for every user can be dealt with clearly.

[Translation done.]

TECHNICAL FIELD

[Industrial Application] This invention divides the management method of a memory area, and the memory area of the storage especially built in the IC card, assigns them to two or more persons, and relates to the management method of the memory area which enabled it to share a memory area by two or more persons.

[Translation done.]

PRIOR ART

[Description of the Prior Art] As a new information record medium which replaces a magnetic card, the IC card attracts attention. this IC card contains the memory device, compared with a magnetic card, informational memory capacity is boiling it markedly, is improving, and, moreover, it has advanced security. Therefore, it is possible to use the IC card of one sheet for two or more applications. For example, it becomes possible to enable it to use the IC card of one sheet published to the specific individual for two or more applications called the ATM card for banks, the medical examination card for hospitals, and prepaid card for department stores. In this case, three persons called a bank, a hospital, and a department store will share the memory area in the same IC card. In order to make two or more persons share the IC card of one sheet, it is common to define two or more fields as a memory area, and to assign each field to each **. That is, in the case of an above-mentioned example, three fields called the field for banks, the field for hospitals, and the field for department stores will be assigned at the time of card issue.

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] It is expected that the use gestalt of an IC card becomes more complicated future still. Although three persons called a bank, a hospital, and a department store are in a juxtaposition use gestalt in an above-mentioned example, it is thought that a hierarchical use gestalt is also needed from now on. For example, a part of field where the bank was assigned to self is lent to a consumer credit company, and a use gestalt which defines and uses the field for consumer credit companies for a part of field for banks is also considered. In this case, to a high order hierarchy's bank, a consumer credit company will belong to a low order hierarchy. Furthermore, a use gestalt which lends a part of field where this consumer credit company was assigned to self to another small firm is also considered. Thus, in order to realize not only a juxtaposition use gestalt but a hierarchical use gestalt, rational management of a memory area is needed and it cannot fully respond in the conventional management method. Especially, it is necessary to fix the various access permissions relevant to security clearly among many persons.

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[0015]

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the initial state of the memory area which should apply the management method by this invention.

[Drawing 2] In the condition which shows in drawing 1 , it is drawing showing the condition of having assigned Field B again to a part of field A.

[Drawing 3] In the condition which shows in drawing 2 , it is drawing showing an example of the authority information written in in Directory C.

[Drawing 4] In the condition which shows in drawing 2 , it is drawing showing an example of the security information written in in Directory C.

[Description of Notations]

A, B, C — A field/directory

F1-F4 — Flag which constitutes authority information

K1-K4 — Key which constitutes security information

[Translation done.]

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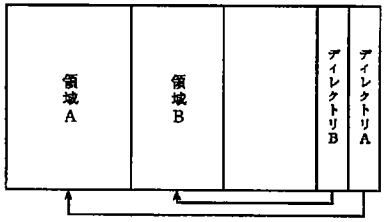
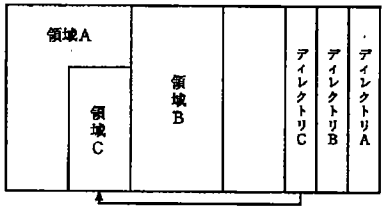
DRAWINGS

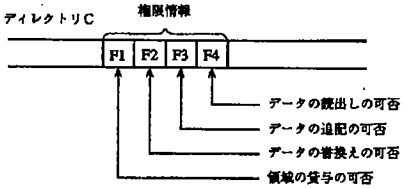
[Drawing 1]



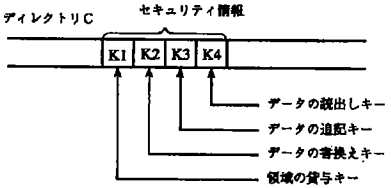
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]

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(43)公開日　平成６年(1994)８月12日

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12/14	３１０　Ｋ	9293－5B		
Ｇ０６Ｋ　19/07				
		8623－5L	Ｇ０６Ｋ　19/00	Ｎ

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(22)出願日　平成５年(1993)１月27日

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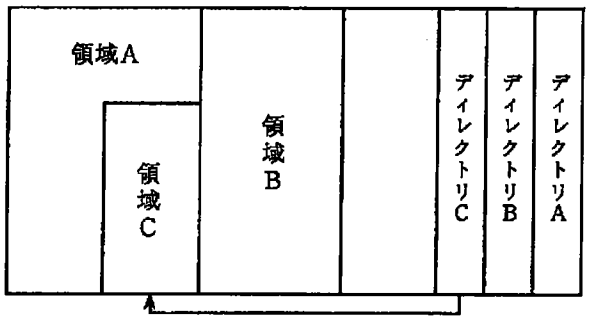
(54)【発明の名称】　メモリ領域の管理方法

(57)【要約】
【目的】　メモリ領域が複数の者によって階層的に利用される場合に、各利用者ごとのアクセス権限を明確に取り扱うことができるメモリ領域の管理方法を提供する。
【構成】　ＩＣカード内のメモリ領域のうち、銀行のために領域Ａが、病院のために領域Ｂが、それぞれ割り付けられ、ディレクトリＡ，Ｂが作成されている。銀行が領域Ａの一部を信販会社に貸与する場合、領域Ｃを定義してディレクトリＣを作成する。信販会社は領域Ｃを利用する。ディレクトリＣ内には、領域Ｃに対する銀行のアクセス権限を各命令ごとに定義した権限情報が書込まれる。



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【特許請求の範囲】

【請求項1】　メモリ領域を分割して複数の者に割り当て、割り当てられた領域をアクセスするために必要な情報が記録されたディレクトリを各割当領域ごとに用意し、複数の者によってメモリ領域を共用できるようにしたメモリ領域の管理方法において、

第1の者に割り当てられた第1の領域内の一部を、第2の者に再度割り当てる階層的な割り当てを行う場合に、前記第2の者に割り当てられた第2の領域に対して、前記第1の者が所定の命令を実行可能であるか否かを示す権限情報を、前記第2の領域についてのディレクトリ内に書き込むことを特徴とするメモリ領域の管理方法。

【請求項2】　請求項1に記載の管理方法において、第2の領域に対する、データの読出し命令、データの追記命令、データの書換え命令、他の者への再割り当て命令、の少なくとも4つの命令のそれぞれについて実行可能であるか否かを示す権限情報を、前記第2の領域についてのディレクトリ内に書き込むようにしたことを特徴とするメモリ領域の管理方法。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明はメモリ領域の管理方法、特に、ＩＣカードに内蔵されている記憶装置のメモリ領域を分割して複数の者に割り当て、複数の者によってメモリ領域を共用できるようにしたメモリ領域の管理方法に関する。

【0002】

【従来の技術】磁気カードに代わる新しい情報記録媒体として、ＩＣカードが注目を集めている。このＩＣカードは、メモリ素子を内蔵しており、磁気カードに比べて情報の記憶容量が格段に向上しており、しかも高度なセキュリティを有する。そのため、1枚のＩＣカードを複数の用途に利用することが可能である。たとえば、特定の個人に対して発行した1枚のＩＣカードを、銀行用のキャッシュカード、病院用の診察カード、デパート用のプリペイドカード、といった複数の用途に利用できるようにすることが可能になる。この場合、銀行、病院、デパート、という三者が同一のＩＣカード内のメモリ領域を共用することになる。1枚のＩＣカードを複数の者に共用させるためには、メモリ領域に複数の領域を定義し、各領域を各者に割り当てておくのが一般的である。すなわち、上述の例の場合、カード発行時に、銀行用領域、病院用領域、デパート用領域、という3つの領域が割り当てられることになる。

【0003】

【発明が解決しようとする課題】ＩＣカードの利用形態は、今後益々複雑になってゆくと予想される。上述の例では、銀行、病院、デパート、という三者が並列的な利用形態にあるが、今後は階層的な利用形態も必要になるものと思われる。たとえば、銀行が自己に割り当てられた領域の一部を信販会社に貸与し、銀行用領域の一部に信販会社用領域を定義して用いるような利用形態も考えられる。この場合、上位階層の銀行に対しては、信販会社は下位階層に所属することになる。更に、この信販会社が自己に割り当てられた領域の一部を別な小会社に貸与するような利用形態も考えられる。このように、並列的な利用形態だけでなく、階層的な利用形態を実現するためには、メモリ領域の合理的な管理が必要になり、従来の管理方法では十分に対応することができない。特に、セキュリティに関連した種々のアクセス権限を多数の者の間ではっきり取決めておく必要がある。

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【0004】そこで本発明は、メモリ領域が複数の者によって階層的に利用される場合に、各利用者ごとのアクセス権限を明確に取り扱うことができるメモリ領域の管理方法を提供することを目的とする。

【0005】

【課題を解決するための手段】

(1)　本願第1の発明は、メモリ領域を分割して複数の者に割り当て、割り当てられた領域をアクセスするために必要な情報が記録されたディレクトリを各割当領域ごとに用意し、複数の者によってメモリ領域を共用できるようにしたメモリ領域の管理方法において、第1の者に割り当てられた第1の領域内の一部を、第2の者に再度割り当てる階層的な割り当てを行う場合に、第2の者に割り当てられた第2の領域に対して、第1の者が所定の命令を実行可能であるか否かを示す権限情報を、第2の領域についてのディレクトリ内に書き込むようにしたものである。

【0006】(2)　本願第2の発明は、上述の第1の発明に係る管理方法において、第2の領域に対する、データの読出し命令、データの追記命令、データの書換え命令、他の者への再割り当て命令、の少なくとも4つの命令のそれぞれについて実行可能であるか否かを示す権限情報を、第2の領域についてのディレクトリ内に書き込むようにしたものである。

【0007】

【作　用】本発明によるメモリ領域の管理方法では、第2の者に割り当てられた第2の領域に対して、第1の者が所定の命令を実行可能であるか否かを示す権限情報が、第2の領域についてのディレクトリ内に書き込まれる。たとえば、銀行が自己に割り当てられた領域の一部を信販会社に貸与し、銀行用領域の一部に信販会社用領域を定義した場合を考える。この場合、信販会社用領域のためのディレクトリ内には、この信販会社用領域に対して、銀行が所定の命令を実行可能であるか否かを示す権限情報が書き込まれる。たとえば、データの読出し命令だけが実行可能である旨の権限情報を書き込んだ場合、銀行は信販会社用領域内のデータを読出す権限はもつが、データの追記や書換えなどを行う権限はもたないことになる。こうして、各利用者ごとの権限を明確に取

り扱うことができるようになる。

【0008】

【実施例】以下、本発明を図示する実施例に基づいて説明する。ここでは、ＩＣカードに内蔵されたＥＥＰＲＯＭのメモリ領域を、複数の者で共用する場合を例にとる。はじめに、このＥＥＰＲＯＭのメモリ領域上に、図１に示すように、領域Ａ，Ｂとディレクトリ Ａ，Ｂとが定義されているものとする。ここで、ディレクトリＡには領域Ａをアクセスするために必要な情報（たとえば、領域Ａのアドレス情報、全容量、既に記録されたレコード数など）が書き込まれ、ディレクトリＢには領域Ｂをアクセスするために必要な情報が書き込まれる。ここでは、領域Ａが銀行の使用領域として確保され、領域Ｂが病院の使用領域として確保されているものとして、以下の説明を行う。したがって、領域Ａには、たとえば銀行預金の預入額や引出額、借入額、などが記録されることになり、領域Ｂには、たとえば診察記録や検査結果などが記録されることになる。したがって、このＩＣカードの所有者は、このＩＣカードを銀行用のキャッシングカードとして利用することもできるし、病院用の診察カードとして利用することもできる。

【0009】上述したような銀行と病院とによる共用形態は、複数の者による並列的な利用形態である。これに対して、たとえば、銀行が自己に割り当てられた領域の一部を信販会社に貸与し、銀行用領域の一部に信販会社用領域を定義して用いるような階層的な利用形態も考えられる。すなわち、図２に示すように、銀行用の領域Ａの一部に、信販会社用の領域Ｃを定義し、銀行は自己のために割り当てられた領域の一部を信販会社に貸与（再割り当て）するのである。この場合、信販会社用の領域Ｃをアクセスするために必要な情報が書き込まれたディレクトリＣが新たに作成されることになる。

【0010】ここで、領域Ａと領域Ｂのような並列的な利用形態の場合には、各領域に対するアクセス権限はこのままで十分に明確になる。なぜなら、銀行はディレクトリＡを用いて領域Ａについてのアクセスを行う権限を有しているだけであり、病院はディレクトリＢを用いて領域Ｂについてのアクセスを行う権限を有しているだけである。ところが、領域Ａと領域Ｃのような階層的な利用形態の場合には、各領域に対するアクセス権限を明確に定義しておく必要がある。なぜなら、信販会社はディレクトリＣを用いて領域Ｃについてのアクセスを行う権限を有しているが、銀行はディレクトリＡを用いて、この領域Ｃを含む領域Ａ全体についてのアクセスを行う権限を有することになるからである。もちろん、このように銀行に領域Ｃを含んだ領域Ａ全体についてのすべてのアクセス権限を認めるような利用形態を採ることも可能であるが、実務上は、必ずしもそのような利用形態が好ましいとは限らない。領域Ｃは、そもそも信販会社が利用するために定義された領域であり、この領域Ｃのデータを銀行が勝手に書換えたりすると不都合が生じるような場合には、銀行には、領域Ｃのデータを読み出す権限は残しておいても、書換える権限までは残しておかない方が事故を防ぐために好ましい。あるいは、このＩＣカードの所有者のプライバシー保護のために、銀行には、領域Ｃのデータを読み出す権限すら残しておかない方が好ましい場合もある。そこで、本発明では、次のような方法により、この領域Ｃに対するアクセス権限を明確化できるようにしている。

【0011】すなわち、図３に示すように、ディレクトリＣの一部に権限情報を書込むようにするのである。この例では、権限情報は４ビットのフラグＦ１～Ｆ４によって構成されている。フラグＦ１は「領域の貸与」の可否、フラグＦ２は「データの書換え」の可否、フラグＦ３は「データの追記」の可否、フラグＦ４は「データの読出し」の可否を示している。ここで、「領域の貸与」とは、領域Ｃを更に別な者へ再割り当てする処理であり、「データの書換え」とは、領域Ｃに既に書込まれているレコードの内容を書換える処理であり、「データの追記」とは、領域Ｃに新たなレコードを追加書込みする処理であり、「データの読出し」とは、領域Ｃに既に書込まれているレコードを読出す処理である。たとえば、このフラグが“０”であれば、銀行は領域Ｃに対してその命令を実行不能であるが、“１”であれば実行可能となる。この場合、銀行に、領域Ｃ内のデータの読出権限だけを残しておくのであれば、Ｆ４＝“１”とし、他のフラグをすべて“０”に設定すればよい。なお、その命令を実行するために、特別なセキュリティ条件が要求されている場合には（たとえば、特定のキーの入力）、そのセキュリティ条件が満たされることが前提となることはもちろんである。このような権限情報は、領域Ｃを定義してディレクトリＣを作成するときに書込むことになるが、後に変更できるようにしておいてもかまわない。

【0012】以上の権限情報は、信販会社に貸与した領域Ｃに対する貸与元としての銀行の権限を制限するものであるが、信販会社の権限を制限する場合には、命令を実行するためのセキュリティ条件としてのキーを利用すればよい。すなわち、銀行は、信販会社に対して領域Ｃを貸与するためにディレクトリＣの作成を行うが、このとき、図４に示すように、ディレクトリＣ内にセキュリティ情報を書込むのである。このセキュリティ情報は、各命令ごとのキーＫ１，Ｋ２，Ｋ３，Ｋ４から構成されている。たとえば、キーＫ２は、領域Ｃに対する「データの書換え」命令を実行するために必要なキーである。そして、信販会社に対しては、これらのキーのうち、権限を与える命令に関するものだけを教えるようにする。たとえば、キーＫ２，Ｋ３，Ｋ４の３つだけを信販会社に教えた場合、信販会社はこれらのキーを用いて、データの書換え、追記、読出しを行うことはできるが、領域Ｃを更に別な者に貸与することはできなくなる。このよ

うな方法により、貸与先としての信販会社の権限を制限することができるようになる。

【００１３】なお、セキュリティを向上させるために、キーＫ１～Ｋ４は、いわゆるトランスファキーとしておくのが好ましい。すなわち、信販会社が銀行から教えられたキーＫ１～Ｋ４を用いて、別な正式なキーＫＹ１～ＫＹ４を書込むことができるようにしておくのである。キーＫ１～Ｋ４は、信販会社が正式なキーを書込むまでの一時的なキーとして用いられることになる。このような方法を採れば、正式なキーＫＹ１～ＫＹ４は銀行に知られることがないため、セキュリティがより向上することになる。

【００１４】以上、本発明を図示する実施例に基づいて説明したが、本発明はこの実施例のみに限定されるものではなく、この他にも種々の態様で実施可能である。特に、権限情報やセキュリティ情報として示した各命令は、一例を挙げただけのものであり、本発明はこれらの命令だけに限定されるものではない。

【００１５】＊【発明の効果】以上のとおり、本発明によるメモリ領域の管理方法によれば、貸与先のディレクトリ内に貸与元の権限を示す情報を書込むようにしたため、メモリ領域が複数の者によって階層的に利用される場合にも、各利用者ごとのアクセス権限を明確に取り扱うことができるようになる。

【図面の簡単な説明】

【図１】本発明による管理方法を適用すべきメモリ領域の初期状態を示す図である。

【図２】図１に示す状態において、領域Ａの一部に領域Ｂを再度割り当てた状態を示す図である。

【図３】図２に示す状態において、ディレクトリＣ内に書込んだ権限情報の一例を示す図である。

【図４】図２に示す状態において、ディレクトリＣ内に書込んだセキュリティ情報の一例を示す図である。

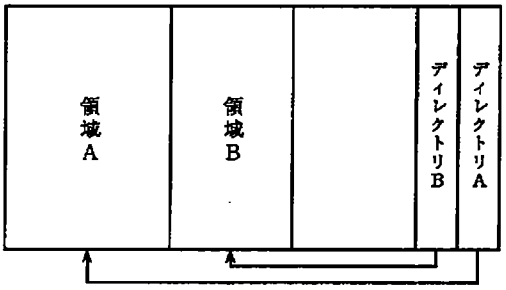
【符号の説明】

Ａ，Ｂ，Ｃ…領域／ディレクトリ

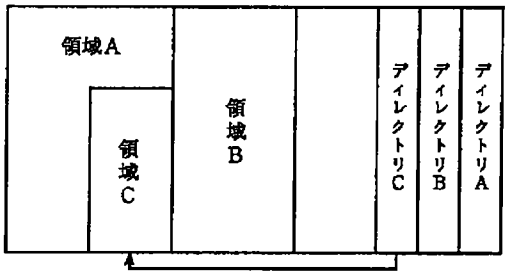
Ｆ１～Ｆ４…権限情報を構成するフラグ

Ｋ１～Ｋ４…セキュリティ情報を構成するキー

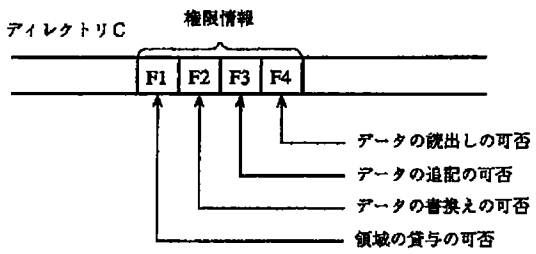
【図１】



【図２】



【図３】



【図４】